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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)

06-559

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on _____

Signature _____

Typed or printed name _____

Application Number

10/586105

Filed

July 14, 2006

First Named Inventor

Crickmore

Art Unit

2856

Examiner

Samir M. Shah

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor.

/A. Blair Hughes/

Signature

☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

A. Blair Hughes

Typed or printed name

☒ attorney or agent of record.
Registration number 32901

312-913-2123

Telephone number

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

September 23, 2009

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.
Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 06-559)

In the Application of:)	
)	
Crickmore et al.)	Examiner: Samir M. Shah
)	
Serial No. 10/586,105)	
)	Group Art Unit: 2856
Filed: July 14, 2006)	
)	Conf. No. 1740
Title: Improvements in and Relating to)	
Accelerometers)	

PRE-APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Pre-appeal brief review is requested for the above-identified patent application.

I. BACKGROUND

The application includes claims 1-15, 17 and 20-22. Claims 1, 15 and 21 are independent claims. The Applicant filed a Reply to the Final Rejection on September 22, 2009 in which claim 17 was cancelled from the application. Assuming the amendment is entered, the claims pending on Appeal will be 1-15 and 20-22.

Independent claims 1 and 21 are reproduced below.

1. A fibre optic accelerometer comprising a seismic mass coaxially constrained within a cylinder of compliant material, arranged to prevent the cylinder deforming inwardly under axial compression, the cylinder being circumferentially wound with optical fibre such that axial compression of the cylinder by the seismic mass increases stress in the optical fibre.

21. A fibre optic accelerometer comprising a body of compliant material having an internal cavity extending in an axial direction;

optical fibre wound circumferentially around said body; and
a seismic mass located within said cavity; wherein the internal surface of said
cavity is constrained against radial displacement.

II. THE CLAIM OBJECTIONS

The examiner raised several claim objections in the Final Rejection. The Applicant filed a Reply to the Final Rejection that overcomes the examiner's objections. The claim objection will be moot assuming the examiner enters Applicant's Final Rejection Reply.

III. TRAVERSE OF THE ANTICIPATION REJECTION

Claims 1, 3-12, 14-15, 17 and 20-22 stand finally rejected under 35 USC 102(b) as being anticipated by Thomas (WO 03/081186).

In order for a reference to anticipate, the reference must show the same invention in as complete a detail as claimed. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Moreover, the elements must be arranged in the reference as required by the claim. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). Claims 1, 3-12, 14-15, 17 and 20-22 are not anticipated at least because Thomas does not disclose every claim feature expressly or inherently.

A. Thomas Does Not Disclose A Device Whereby Axial Compression Of The Device Cylinder By A Seismic Mass Increases Stress In The Optical Fibre

Independent claims 1 and 15 are both novel and patentable because Thomas does not disclose or suggest devices and methods whereby axial compression of the device cylinder by the seismic mass increases stress in the optical fibre. What Thomas does disclose is a fibre optic accelerometer having a mass contained within a flextensional body in the form of a concave tapered cylinder. Optic fibre is wound circumferentially around the tapered cylinder. Thomas explains, at page 6, lines 26-36 and at page 7, lines 34-35 that radial deformation of the concave cylinder occurs under axial displacement because of the shape function and geometry of the concave cylinder. Based upon this description, it would be immediately apparent to one skilled in the art at the time of the invention that, because of the concave shape taught in Thomas, compression of the cylinder by the seismic mass in Thomas will result in a decrease in tension in

the optic fibre. Thus Thomas does not disclose the feature of claim 1 that axial compression of the cylinder by the seismic mass increases stress in the optical fibre. It is for at least this reason that independent claims 1 and 15 are not anticipated by Thomas.

The examiner considered Applicant's position that Thomas does not disclose this feature of claims 1 and 15 and rebutted Applicant's position by alleging that Thomas implies an increase in stress in the optical fibre on axial compression. (See page 2 of the May 26, 2009 Final Rejection). Claims 1 and 15 are novel in view of even the examiner's rebuttable position because the position is both legally and technically flawed.

1. The examiner's rebuttal position is legally flawed

In order for a reference to anticipate in terms of 35 U.S.C. Section 102, every element of the claimed invention must be identically shown in a single reference." Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677, 7 U.S.P.Q.2d 1315, 1317 (Fed. Cir. 1988). It is possible for a reference to anticipate where one or more of the claimed elements is inherent from the prior art. The examiner here has alleged that the claim feature "the cylinder being circumferentially wound with optical fibre such that axial compression of the cylinder by the seismic mass increases stress in the optical fibre" is "implied" from the prior art. However, whether or not the prior art "implies" a claim feature is irrelevant to proof of anticipation. This is because the law does not recognize an "implied" feature. For at least this reason, the examiner's anticipation position is legally flawed and must be withdrawn.

2. The examiner's rebuttal position is technically flawed

In order for a prior art reference to have an inherent feature or step, a structure or step in the prior art must necessarily function in accordance with the anticipated claim feature. *In re King*, 231 USPQ 136, 138 (Fed. Cir. 1986). This is not the case with the cited prior art. The prior art device cannot be said to function as claimed because the examiners understanding of the function of the Thomas device is technically flawed.

The examiner takes the position in the Final Rejection that "since suspension system 25 [of Thomas] prevents axial displacement within the cylinder (12), the cylinder would end up bulging at it's center due to axial compression thereby increasing stress in the optical fibre coil (11)." The examiner's understanding of the operation of the Thomas device in this regard is technically wrong. In Thomas, axial compression of the device is converted into radial

displacement at the centre of the cylinder according to the shape function of the geometry of the cylinder. This radial displacement in Thomas is not due to bulk material deformation (as in the present invention) but instead due to the flextensional geometry of the staves i.e., due to bending of the staves (the cylinder of Thomas is not solid but sliced into staves). As a result, in Thomas, axial compression of the device results in a reduction of the circumference of the cylinder at the location of the optic fibre, thereby causing a decrease in hoop or tensile stress of the fibres.

Concerning the suspension system (25) of Thomas, on which the Examiner bases certain arguments, it is noted that the examiner's technical positions regarding the operation of Thomas are contradictory. At the top of page 3 of the Final Rejection, the examiner states that "suspension system (25) prevents axial displacement". At the bottom of the same page, and spanning page 4 also, the Examiner quotes Thomas as disclosing "a suspension system (25) to prevent sideways motion but allow axial motion of the device". The same system (25) cannot, as the examiner alleges, simultaneously prevent and allow axial motion. There is, therefore, no technical argument to support any 'bulging' as asserted by the Examiner.

To clarify, suspension system (25) of Thomas acts between one end of the cylinder (12) and the mass (23) to prevent sideways motion there between. In other words, the suspension system ensures that the two components remain coaxial. The suspension system is specifically designed to allow relative axial displacement. It should be noted however that suspension system (25) does not prevent radial displacement at the centre of the cylinder at the location of the fibre coil (11). This radial displacement occurs with no sideways motion – i.e. the cylinder and mass remain coaxial. This is completely clear from the description and drawings of Thomas, particularly Figure 3.

For each of the reasons recited above, independent claims 1 and 15 are novel and patentable. Dependent claims 3-12, 17 and 20 are novel and patentable at least by virtue of their dependence upon one of independent claims 1 or 15 .

B. Independent Claim 21 Is Novel and Patentable

Independent claim 21 is novel and patentable at least because Thomas does not disclose a device "wherein the internal surface of said cavity is constrained against radial displacement" as required by claim 21. Looking at Thomas, for example Figures 2 and 4, it can clearly be seen that there is nothing preventing the internal surface of concave cylinder 12 from deformation – an

area of free space exists between cylinder 12 and mass 23. This is completely unsurprising, since in order for the device of Thomas to function as described, the internal surface of the cylinder must be free of obstruction to allow the cylinder to deform inwardly under axial compression of the cylinder. Thus independent claim 21, and claim 22 which depends upon claim 21 are novel at least because the referenced feature of claim 21 above is absent from Thomas.

The examiner rebuts applicant's patentability position by asserting that Thomas clearly intends to constrain the cavity against radial displacement by disclosing "a suspension system (25) to prevent sideways motion but allow axial motion of the device". (Citing Thomas at page 6, lines 18-20). The examiner's rebuttal argument is again based upon a misunderstanding about the teachings of Thomas. In Thomas, the inner surface of the cylinder cavity is not radial constrained. Radial motion (as opposed to sideways motion) is necessary for operation of the device of Thomas. Suspension system (25) of Thomas, as has been explained above, prevents net sideways displacement at the end of the cylinder. As is abundantly clear from Figure 2 of Thomas, radial displacement at the centre of the cylinder, due to bending (buckling) of the barrel stave, still occurs even though the end of the cylinder or barrel stave is laterally constrained. For at least these reasons independent claim 21 and dependent claim 22 are novel and patentable.

CONCLUSION

All pending application claims are believed to be ready for patenting for at least the reasons recited above. Favorable reconsideration and allowance of all pending application claims is, therefore, courteously solicited.

McDonnell Boehnen Hulbert & Berghoff LLP

Date: September 23, 2009

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